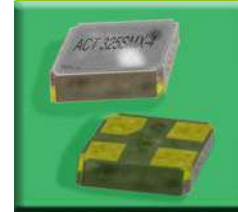


## ACT325SMX-4

The ACT325SMX-4 is a low cost, 4 pad, high quality, low aging 3X2.5mm SMD Crystal in a ceramic base / metal lid package, seam welded for good long term reliability. The device has the lid grounded via the package to reduce EMI issues. The wide frequency range and specification options ensure suitability for many equipments.

APPLICATIONS: Bluetooth, WLAN, PDA, Pagers, Card readers, Cellular, PC Accessories, Notebook, Audio-visual, PCMCIA, MP3, Consumer & Communications.

Compatible with Eu Directive  
2002/EC - RoHS



### Specification

| Parameter                    | Symbol         | Specification                          | Condition           |
|------------------------------|----------------|----------------------------------------|---------------------|
| Frequency Range              | fo             | 12.000MHz ~ 54.000MHz                  | Fundamental, AT Cut |
| Frequency Tolerance (@25°C)  | $\Delta f/f_0$ | 10 ppm ~ 100ppm                        | Please specify      |
| Stability over temp range    | Tc             | Refer to table 2                       | Please specify      |
| Temp Operating Range         | Topr           | -10 ~ -60°C, -20 ~ -70°C or -40 ~ 85°C | Please specify      |
| Temp Storage Range           | Tstg           | -55 ~ 125°C                            |                     |
| Equivalent Series Resistance | ESR            | See table below                        |                     |
| Load Capacitance             | CL             | (12pF typical)                         | Please specify      |
| Shunt Capacitance            | C0             | 5.0 pF max                             |                     |
| Drive Level                  | DL             | 10μW ( 100μW max )                     |                     |
| Insulation Resistance        | IR             | 500MΩ min                              | @100V DC            |
| Aging                        | Fa             | ±3.0 ppm /year max                     | @25°C               |

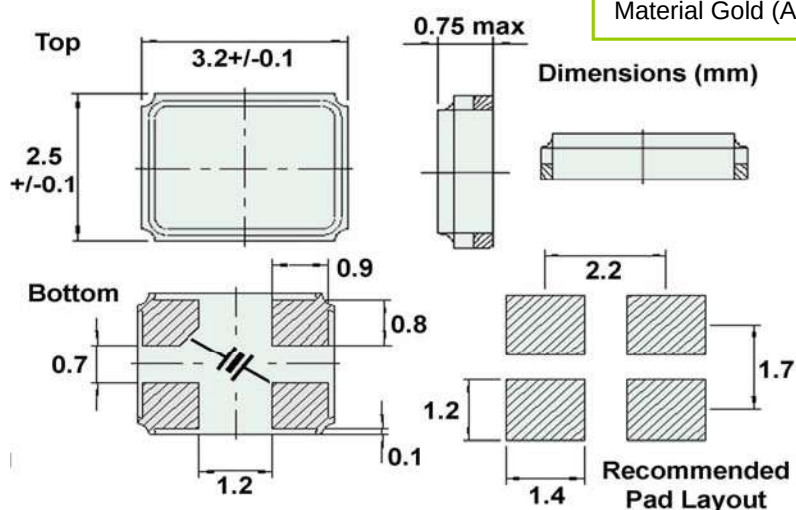
**Table 1**

| Freq. Range (MHz) | ESR (Ω) max | Mode        |
|-------------------|-------------|-------------|
| 12.000 ~ 13.999   | 150         | Fundamental |
| 14.000 ~ 15.999   | 100         | Fundamental |
| 16.000 ~ 19.999   | 80          | Fundamental |
| 20.000 ~ 29.999   | 60          | Fundamental |
| 30.000 ~ 54.000   | 50          | Fundamental |

### Standard Frequencies MHz

|           |
|-----------|
| 12.000000 |
| 13.000000 |
| 14.318180 |
| 14.745600 |
| 16.000000 |
| 16.384000 |
| 17.734475 |
| 18.432000 |
| 20.000000 |
| 24.000000 |
| 24.576000 |
| 26.000000 |
| 27.000000 |
| 30.000000 |
| 32.000000 |
| 40.000000 |
| 48.000000 |

### Dimensions (mm)



Pad Surface  
Material Gold (Au)

Please note that all parameters can not necessarily be specified in the same device

Customer to specify : Frequency, Frequency Tolerance, Temperature Stability, Operating Temperature & Load Capacitance

In line with our ongoing policy of product evolution and improvement, the above specification may subject to change without notice

ISO9001:2000 Registered

For quotations or further information please contact us at:

3 The Business Centre, Molly Millars Lane, Wokingham, Berkshire, RG41 2EY, UK

<http://www.actcrystals.com>

Issue 2 SKr

Date: 30/11/10

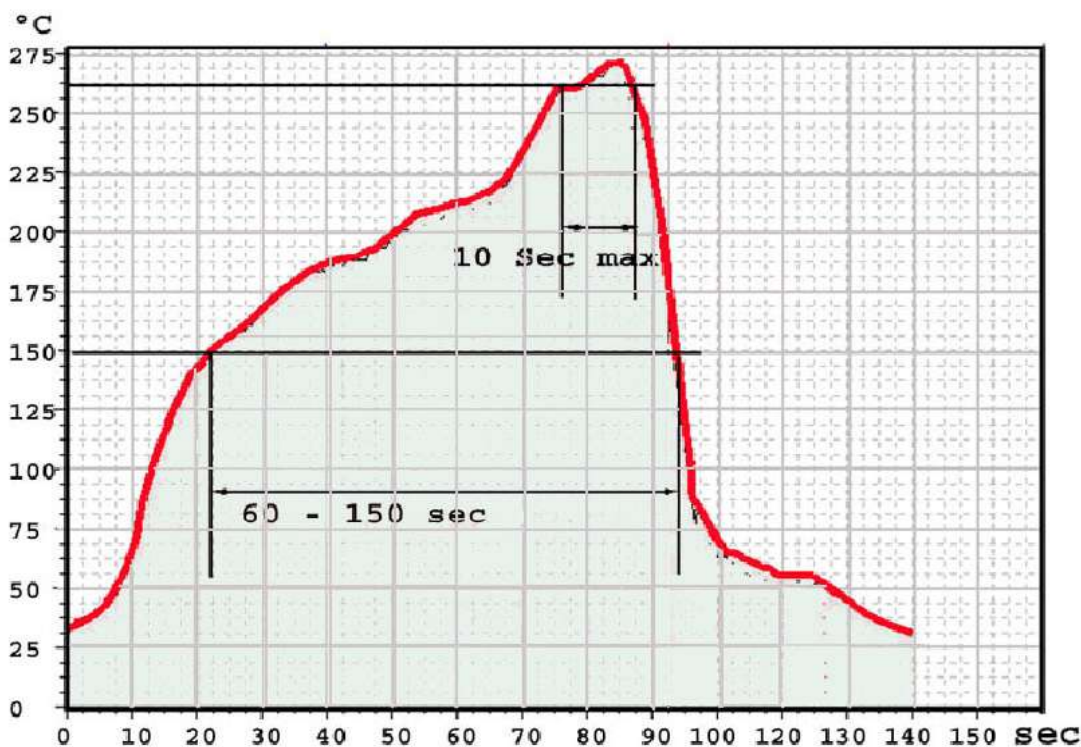
## ACT325SMX-4 continued

Table 2

| Stability   | ±10ppm | ±15ppm | ±20ppm | ±30ppm | ±50ppm | ±100ppm |
|-------------|--------|--------|--------|--------|--------|---------|
| -10 ~+60° C | ☑      | ☑      | ☑      | ☑      | ☑      | ☑       |
| -20 ~+60° C | ☑      | ☑      | ☑      | ☑      | ☑      | ☑       |
| 0 ~+60° C   | ☑      | ☑      | ☑      | ☑      | ☑      | ☑       |
| -10 ~+70° C | ☑      | ☑      | ☑      | ☑      | ☑      | ☑       |
| -20 ~+70° C | ☑      | ☑      | ☑      | ☑      | ☑      | ☑       |
| -30 ~+60° C |        | ☑      | ☑      | ☑      | ☑      | ☑       |
| -30 ~+70° C |        | ☑      | ☑      | ☑      | ☑      | ☑       |
| -20 ~+85° C |        | ☑      | ☑      | ☑      | ☑      | ☑       |
| -30 ~+85° C |        | ☑      | ☑      | ☑      | ☑      | ☑       |
| -40 ~+85° C |        |        | ☑      | ☑      | ☑      | ☑       |

|   |           |
|---|-----------|
| ☑ | Available |
| ☒ | Standard  |

### Maximum Re-flow Profile



In line with our ongoing policy of product evolution and improvement, the above specification may subject to change without notice

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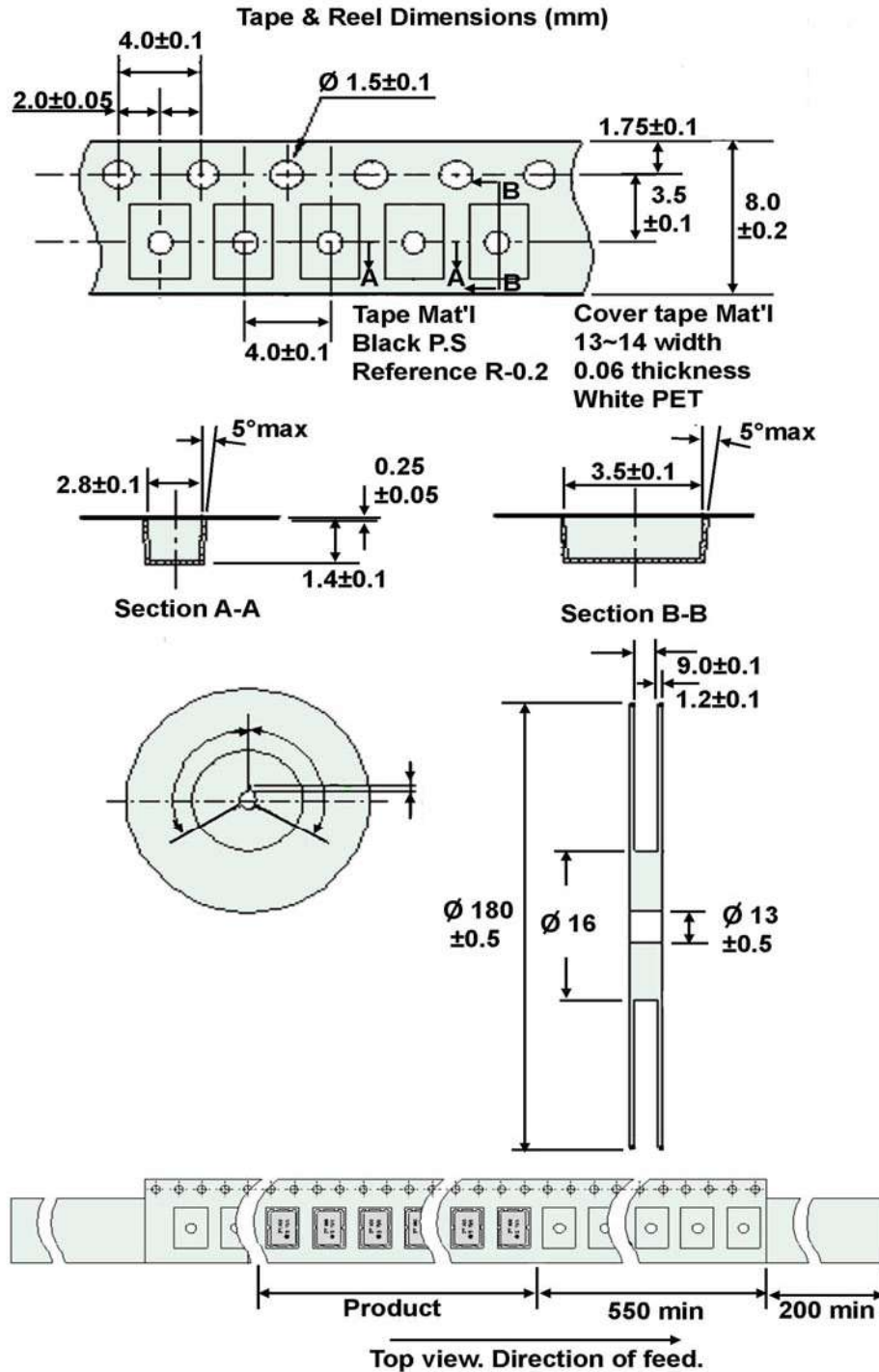
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**ACT325SMX-4 continued**

( 1K pcs each reel )



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Date: 30/11/10

**SERIES : ACT325SMX-4 Part numbering code is BT**

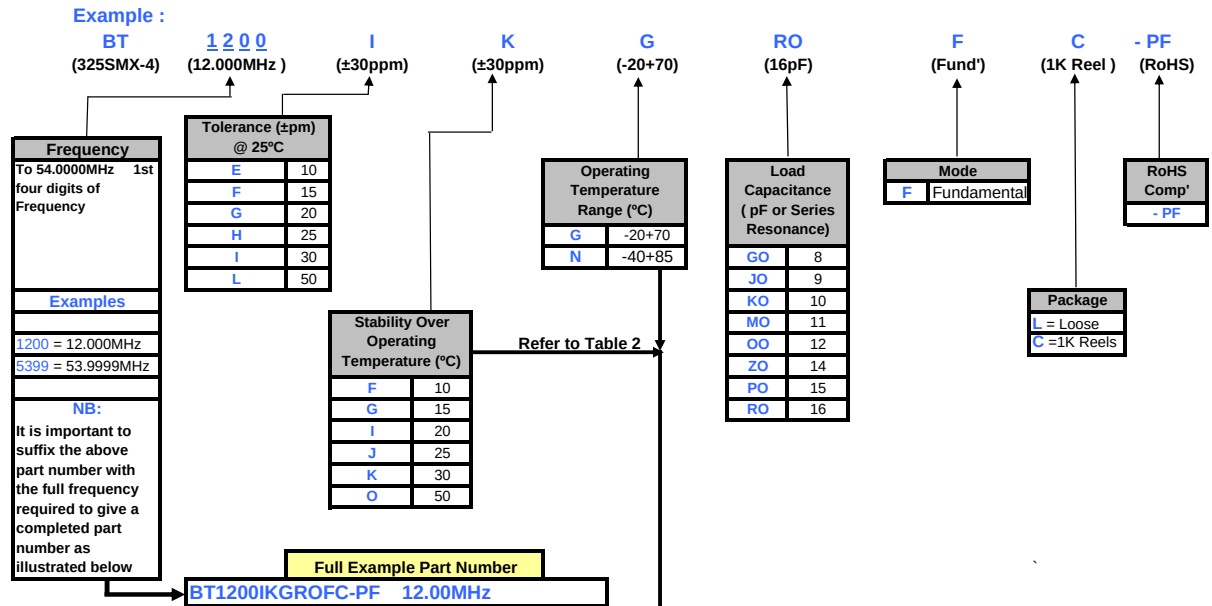


Table 2

| Stability   | ±10ppm | ±15ppm | ±20ppm | ±30ppm | ±50ppm | ±100ppm |
|-------------|--------|--------|--------|--------|--------|---------|
| -10 ~+60° C | ☑      | ☑      | ☑      | ☑      | ☑      | ☑       |
| -20 ~+60° C | ☑      | ☑      | ☑      | ☑      | ☑      | ☑       |
| 0 ~+60° C   | ☑      | ☑      | ☑      | ☑      | ☑      | ☑       |
| -10 ~+70° C | ☑      | ☑      | ☑      | ☑      | ☑      | ☑       |
| -20 ~+70° C | ☑      | ☑      | ☑      | ☑      | ☑      | ☑       |
| -30 ~+60° C |        | ☑      | ☑      | ☑      | ☑      | ☑       |
| -30 ~+70° C |        | ☑      | ☑      | ☑      | ☑      | ☑       |
| -20 ~+85° C |        | ☑      | ☑      | ☑      | ☑      | ☑       |
| -30 ~+85° C |        | ☑      | ☑      | ☑      | ☑      | ☑       |
| -40 ~+85° C |        |        | ☑      | ☑      | ☑      | ☑       |

|   |                          |
|---|--------------------------|
| ☑ | Available please enquire |
| ☑ | Standard                 |

**NOTES :**

- 1) Tighter Tolerances and Stabilities and other Operating Temperature Ranges may be available. As each of these specification parameters impact on each other, it is not always possible to combine all options in one device. Therefore, if a specification not catered for above is required, please contact us directly for the relevant part number code(s).
- 2) ACT are always happy to consider truly custom specification parts which may require non-standard specification parameters, specific testing, customer requested AQL requirements, non standard packaging or taping and reeling and custom marking. Such devices would normally be allocated a custom specification part number which is wholly customer specific.  
 EG : A 12.000MHz custom ACT325MX-4 device may have a part number such as BT1200C- C1122-PF)
- 3) A guide to availability of tighter stabilities appears in Table 2 of the data sheet
- 4) Frequencies below 10.000MHz are prefixed with a "0" (eg: 0900 = 9MHz. Whereas 10.000MHz is 1000 ) See main data sheet for available frequency range.